

AMENDMENTS TO THE SPECIFICATION

Please amend the specification as indicated hereinbelow, wherein reference is made to the paragraph numbers of the application as originally filed.

[0011] The point preferably comprises a first radially outwardly disposed portion of the at least one land angling inwardly and axially toward the shank, to a position between a peripheral portion of the body, and the longitudinal axis; and a second, radially inwardly disposed portion of the at least one land, angling inwardly and axially away from the shank and toward the central point structure.

[0014] The twist drill further comprises the at least one flute terminating in a cutting lip disposed proximate the point. The at least one flute has a sectional configuration, in a plane perpendicular to the longitudinal axis, incorporating a leading edge and a trailing edge. A straight surface extends inwardly from the leading edge, at least to a position coplanar with a plane passing perpendicularly through the straight surface to the longitudinal axis. A first concave curved portion extends from an inward end of the straight surface and may have at least one radius of curvature less than one-half the radius of the twist drill body. A second concave curved portion extends inwardly from the trailing edge toward an outer edge region of the first concave curved portion. A ridge is formed by the intersection of the outer edge region of the first concave curved portion and an inner edge region of the second concave curved portion.

[0020] The invention also comprises, in part, a method for making a twist drill comprising the steps of:

forming a cylindrical blank, having a longitudinal axis and two transverse axes extending perpendicular to one another and to the longitudinal axis;

forming at least one flute in the cylindrical blank, the at least one flute including a ridge disposed therein for prompting breakage of chips formed during use of the drill, the at least one flute extending from a point region of the cylindrical blank to a shank region of the cylindrical blank;

forming at least one land in the cylindrical blank, the at least one land extending along the blank adjacent to the at least one land;

grinding the point region of the cylindrical blank to a contact angle; grinding a brad and spur configuration onto the point region;

forming an axial relief surface on the at least one land, by aligning the blank along a first axis of an a three coordinate axis system, inclining the blank a selected angle away from the first axis while maintaining the blank within a plane defined by the first axis and another axis of the three coordinate system, and then inclining the blank a selected angle away from the plane defined by the first axis and another axis of the three coordinate system; and

presenting the blank to a planar grinding surface disposed perpendicular to the first axis of a three coordinate system.

[0045] While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will be described in detail several specific embodiments, with the understanding that the present disclosure is to be considered an exemplification of the principles of the invention and is not intended to limit the invention to the embodiments illustrated.

[0064] A notable difference between the axial relief feature (surface 162) of the present invention, and such tip structures as a "split point" is that the plane of the axial relief feature of the present invention intersects the cutting lip, along axis II (see Fig. 12), where, in "split point" drills the plane of the cut is well moved off of the cutting lip and intersects and passes through the longitudinal axis of the drill, instead of extending tangentially through it.